

List of Claims

1-9. (cancelled)

10. (previously presented) A fuel injector comprising:

a lower outer body;

a tip at least partially disposed within said lower body and having an inner surface and an outer surface;

an at least one orifice disposed within said tip and allowing communication between said inner surface and said outer surface;

a fuel passage disposed within said tip and capable of communication with said at least one orifice;

a needle valve at least partially disposed in said tip; said needle valve being moveable between a first position at which communication between said orifice and said fuel passage is closed and a second position at which communication between said orifice and said fuel passage is open;

an upper body forming a first mating part and being connected to said lower body, said upper body having a bore;

a plunger at least partially disposed within said bore;

a fuel pressurization chamber at least partially defined by said bore and said plunger;

a cartridge valve assembly forming a second mating part and being connected to said upper body;

said first and second mating parts being in abutting contact with one another;

a first fluid bore within said upper body;

a second fluid bore within said cartridge valve assembly;

a high pressure seal connecting said first fluid bore and said second fluid bore;

said high pressure seal being a radially expandable tube having an outer surface and a hollow bore running through said tube along a first axis and defining an inner surface; said bore beginning at a first end of said tube and ending at a second end; said first end of said tube being adapted to fit into said first fluid bore and said second end of said tube being adapted to fit into said second fluid bore and allowing fluid communication between said first fluid bore and said second fluid bore; wherein said tube is adapted to form a seal between said first and second fluid bores in response to pressurized fluid within said hollow bore.

11. (cancelled)
12. (previously presented) The fuel injector of claim 10 wherein said tube is press fit into said first bore.
13. (previously presented) The fuel injector of claim 10 wherein said tube is clearance fit into said second bore.
14. (previously presented) The fuel injector of claim 10 having a thickness defined by a distance between said outer surface and said inner surface of approximately 1 millimeter.
15. (previously presented) The fuel injector of claim 10 having a thickness defined by a distance between said outer surface and said inner surface of less than 1 millimeter.
16. (previously presented) The fuel injector of claim 10 wherein said seal is exposed to pressures in excess of 20,000 PSI.
17. (previously presented) The fuel injector of claim 10 wherein said seal has a smooth surface finish.
18. (previously presented) The fuel injector of claim 10 wherein said seal is completely encompassed by said first and second mating parts.
19. (currently amended) A method of sealing first and second mating parts with a seal comprising a tube having an outer surface and an inner surface defining a hollow bore running through said tube along a first axis, said bore beginning at a first end of said tube and ending at a second end, the method comprising the steps of:
- positioning the first and second mating parts in abutting contact with one another;
 - inserting said first end of said seal into a first bore of said first mating part;
 - inserting said second end of said seal into a second bore of said second mating part;
 - introducing pressurized fluid into said seal at least in part by moving a plunger;

expanding said seal radially about said first axis with said pressurized fluid to form a seal between said first mating part and said second mating part.

20. (cancelled)

21. (original) The method of claim 19 wherein the step of inserting said first end further comprises the step of press fitting said first end of said seal into said first bore.

22. (original) The method of claim 19 wherein the step of inserting said second end further comprises the step of clearance fitting said second end of said seal into said second bore.

23. (original) The method of claim 19 further comprising the step of completely encompassing said seal in said first and second bores.

24. (cancelled)

25. (currently amended) A method of sealing a fluid passage connecting a first mating part and a second mating part of a fuel injector assembly comprising the steps of:
positioning the first mating part in abutting contact with the second mating part;
positioning a tube with an axial bore partially within a first bore of the first mating part and partially within a second bore of the second mating part;
introducing pressurized fluid of a predetermined pressure into the axial bore of the tube at least in part by moving a plunger; and
radially expanding the tube via the pressurized fluid to form a seal between the first and second mating parts.

26. (previously presented) The method of claim 25 wherein the step of positioning the tube comprises a step of press-fitting the tube with the first mating part, and a step of clearance fitting the tube with the second mating part.

27. (previously presented) The method of claim 26 wherein:
the step of positioning the tube comprises completely encompassing a metallic tube having a smooth outer surface finish within the first and second bores; and

the step of introducing pressurized fluid comprises introducing pressurized fluid of at least about 20,000 PSI into the bore of the tube.

28. (previously presented) The method of claim 25 wherein:
the step of positioning the first and second mating parts comprises positioning a first mating part including a spill valve to abut a second mating part including a fuel pressurization plunger; and

the step of positioning the tube comprises positioning the tube partially within a first portion of a fuel spill passage and partially within a second portion of a fuel spill passage of the fuel injector assembly.

29. (previously presented) The method of claim 28 wherein the step of introducing pressurized fluid into a bore of the tube comprises a step of pressurizing a fuel at least in part via the fuel pressurization plunger of the second mating part.

30. (previously presented) The method of claim 29 wherein the step of radially expanding the seal comprises permanently radially expanding the seal.